A. ASSESSMENT MEASURES EMPLOYED

• Prior to completing the first year core curriculum, each student met with the Program Director to discuss the course work taken, course work yet to be completed, and progress in the graduate anatomy program. At this meeting, students submitted a semester-by-semester timetable outlining their plans for completing the remaining requirements for their degree. Thesis students confirmed their mentor and laboratory in which their thesis research work will be done. Non-thesis students set a tentative date for taking the oral comprehensive examination over the core curriculum. A Program of Study was completed for all students.
• Graduating students completed the exit interview and exit survey questionnaire. The exit interviews were conducted by the Program Director to determine the future plans of graduating students and to discuss their impressions of the quality and effectiveness of their education and training in our programs.
• Thesis committees completed the form “Record of Supervisory Committee Meeting” at committee meetings and the form “Thesis Proposal and Defense” at the time of the thesis research defense.
• Comprehensive oral examination committees completed the form “Record of Comprehensive Examination” at the time of the examination.

B. ASSESSMENT FINDINGS

• Headcount enrollment for this assessment period was 51 students.
• A total of 37 applications were reviewed for the 2011/12 academic year; 36 were interviewed; 34 were accepted; 28 registered for class. The GRE is not required for admission unless the undergraduate GPA is <3.0.
• Program student enrollments are shown below.
• Profile of new registered students:
  • Average undergraduate GPA was 3.35 (a slight increase over last year).
  • Nineteen women; nine men.
  • Twenty White; seven Black; one Asian Indian.
  • Twelve different undergraduate majors; sixteen students were Biology majors.
  • Sixteen different undergraduate institutions represented, with 9 students from
    WSU, 3 students from the University of Dayton, and 4 students from The Ohio State University.
  • No international students.
• Four students withdrew from the program. Two of these withdrew because they
  were accepted into another professional program.
• Most students completed the core curriculum as planned.
• All but one of the full-time thesis students completed their research and defended
  their thesis by the end of the second year as certified by the thesis committees.
• Eleven non-thesis students completed the oral comprehensive examination by the
  end of the Winter Quarter of the second year as certified by the examination committee.
• Thesis students completed their thesis research and successfully defended their
  research as certified by the thesis committees.
• Master’s program students presented at national and international meetings.
• All students were in good academic standing (i.e., a GPA of at least 3.0) and all full
  time students completed the core course requirements within two years. All graduating
  students completed the required core courses. All students in progress are completing
  this requirement.
• All students are required to complete 3 seminars, 2 of which need to be in the
  NCBP Department. All graduating students completed the seminar requirements. All
  students in progress are completing this requirement.
• All but five of the full-time students completed the graduate program within 2
  years.
• Students who completed the assessment questionnaire indicate the strengths of
  the program are the organization of the courses, general curriculum strength,
  quality of the professors, and quality of the facilities.
• The NCBP Department provides an exit questionnaire to be completed by students
  prior to graduation. Students rated the questions by: strongly disagree, disagree,
  agree, strongly agree, or do not know. A total of 22 questions were asked. The
  questions were divided into 4 categories: Quality of the Faculty; Quality of the
  Curriculum; Adequacy of Resources for Research; and Overall Impression of the NCBP
  Master’s Program. Six questionnaires were collected.
• The majority of students who completed the exit questionnaire either strongly
  agreed or agreed with the statements assessing the program’s effectiveness.
• Our graduating students continue to have success in obtaining acceptance into
  doctoral level academic programs, including medical school, dental school, and Ph.D.
  programs; or other medically-related programs, such as physician assistant; or
  employment in a professional position teaching anatomy. Survey responses and
  student feedback indicate that our program provides graduates with the needed
  expertise for these career choices, especially for the health-related professions.
• During this assessment period, fifteen students completed MS degree.
• Number of degrees awarded by the Program are shown below.

<table>
<thead>
<tr>
<th>Year</th>
<th>M.S. Degrees Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>15</td>
</tr>
<tr>
<td>2001</td>
<td>9</td>
</tr>
<tr>
<td>2002</td>
<td>12</td>
</tr>
<tr>
<td>2003</td>
<td>11</td>
</tr>
<tr>
<td>2004</td>
<td>14</td>
</tr>
<tr>
<td>2005</td>
<td>16</td>
</tr>
<tr>
<td>2006</td>
<td>14</td>
</tr>
<tr>
<td>2007</td>
<td>6</td>
</tr>
<tr>
<td>2008</td>
<td>12</td>
</tr>
<tr>
<td>2009</td>
<td>10</td>
</tr>
<tr>
<td>2010</td>
<td>15</td>
</tr>
<tr>
<td>2011</td>
<td>11</td>
</tr>
<tr>
<td>2012</td>
<td>14</td>
</tr>
</tbody>
</table>

• Students were well prepared for post-graduate study. Students possessed a broad knowledge of anatomical topics, and have effective oral and written communication skills.
• No challenges were encountered.
• The assessment data indicate that all Outcome subcategories were achieved and that the students are performing at an excellent level in this regard.

C. ACTIONS TAKEN TO IMPROVE STUDENT LEARNING
• An NCBP Advisory Committee was formed to develop learning objectives and corresponding rubrics for assessment of the Anatomy M.S. Program. In 2013, the committee decided on the learning objectives for the program. The committee developed the rubrics in early 2014, so that they can be used in the 2014 assessment period.

D. STUDENT LEARNING OUTCOMES TO BE ASSESSED AND EXAMINED
• The new program learning outcomes are:
  1. Graduates will be able to communicate effectively. We will use the Scholarly Project in the Course Option of the Anatomy Program and the written thesis in the Thesis Option of the Anatomy Program for the applied rubrics.
  2. Graduates will demonstrate extensive knowledge of Anatomy, as taught in this program. The Comprehensive Exam in the Course Option of the Anatomy Program will be used to evaluate this outcome using the rubric.
  3. Graduates will demonstrate critical thinking in their thesis research. The oral defense of the thesis will be used in the Thesis Option of the Anatomy Program to evaluate this outcome using the rubric.

E. METHODS FOR COLLECTING DATA
• All students in either Option of the Anatomy Program must complete the above listed elements to evaluate this outcome using the rubric.
F. ASSESSMENT MEASURES
• **Course Option of the Anatomy Program:** The assessment will use the Comprehensive Exam and the Scholarly Project for all students in this track.
• **Thesis Option of the Anatomy Program:** The assessment will use the written thesis and the oral defense of the thesis for all students in this track.
• **Indirect Assessments:** Exit Interviews. All students in the program evaluate elements of the program using a Likert scale. The only part of the program that has consistently received lower evaluations is the Seminar. The committee discussed these and suggested for the upcoming year regarding the seminar series.

G. SIGNIFICANT FINDINGS
• The Advisory Committee has developed the rubrics for use in the upcoming year. The Advisory Committee did discuss the observation from the exit interviews that the students are often lost when they attend the seminars, sometimes failing to grasp the main point of the talk. It was suggested that following the seminar, the host for seminar speaker meet with the students following the seminar and do an overview session to clarify the topics discussed in the seminar.

H. DISCUSSION OF RESULTS
• The program assessment is always shared with the Department Chair. In the future, we will also share results of the quantification of the rubrics with the NCBP Advisory Committee, who will work to make any needed suggestions for changes in the program or the assessment tolls.

I. ACTIONS PLANNED TO IMPROVE STUDENT LEARNING
• Below are the rubrics that will be used by the Anatomy Program to access the Scholarly Project, the written thesis, and the oral defense of the thesis.
<table>
<thead>
<tr>
<th>Criteria/element</th>
<th>Exemplary (4)</th>
<th>Proficient (3)</th>
<th>Partially Proficient (2)</th>
<th>Unsatisfactory (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student knowledge of</td>
<td>Student demonstrates full knowledge by answering all questions with explanations and elaboration</td>
<td>Student is at ease with expected answers to all questions, but fails to elaborate</td>
<td>Student is uncomfortable with information and is able to answer only rudimentary questions</td>
<td>Student does not have grasp of information; cannot answer questions about subject</td>
</tr>
<tr>
<td>Human Microanatomy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student knowledge of</td>
<td>Student demonstrates full knowledge by answering all questions with explanations and elaboration</td>
<td>Student is at ease with expected answers to all questions, but fails to elaborate</td>
<td>Student is uncomfortable with information and is able to answer only rudimentary questions</td>
<td>Student does not have grasp of information; cannot answer questions about subject</td>
</tr>
<tr>
<td>Human Neurobiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student knowledge of</td>
<td>Student demonstrates full knowledge by answering all questions with explanations and elaboration</td>
<td>Student is at ease with expected answers to all questions, but fails to elaborate</td>
<td>Student is uncomfortable with information and is able to answer only rudimentary questions</td>
<td>Student does not have grasp of information; cannot answer questions about subject</td>
</tr>
<tr>
<td>Human Gross Anatomy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student knowledge of</td>
<td>Student demonstrates full knowledge by answering all questions with explanations and elaboration</td>
<td>Student is at ease with expected answers to all questions, but fails to elaborate</td>
<td>Student is uncomfortable with information and is able to answer only rudimentary questions</td>
<td>Student does not have grasp of information; cannot answer questions about subject</td>
</tr>
<tr>
<td>Advanced Human Embryology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element or Criteria</td>
<td>Exemplary (4)</td>
<td>Proficient (3)</td>
<td>Partially Proficient (2)</td>
<td>Unsatisfactory (1)</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Explanation of Issues</strong></td>
<td>Issue/problem to be considered critically is stated clearly and described comprehensively, delivering all information for full understanding</td>
<td>Issue/problem to be considered critically is stated, described and clarified so that understanding is not seriously impeded by omissions</td>
<td>Issue/problem to be considered critically is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and or backgrounds unknown</td>
<td>Issue/problem to be considered critically is stated without clarification or description</td>
</tr>
<tr>
<td><strong>Evidence</strong></td>
<td>Data and evidence taken from outside sources are critically evaluated and questioned thoroughly</td>
<td>Data and evidence taken from outside sources are critically evaluated with some questioning apparent</td>
<td>Data and evidence taken from outside sources shows some evaluation, but not enough to coherently analyze</td>
<td>Data and evidence taken from outside sources without any interpretation/evaluation.</td>
</tr>
<tr>
<td><strong>Influence of context and assumptions</strong></td>
<td>Thoroughly (systematically and methodically) analyzes own and others’ data, with any appropriate statistical analysis, and carefully evaluates the relevance of context when presenting a position</td>
<td>Identifies own and others’ data, with any appropriate statistical analysis, and several relevant contexts when presenting a position</td>
<td>Questions some data or statistical analysis of data. Identifies several relevant contexts when presenting a position. May be more aware of others’ assumptions than one’s own (or vice versa)</td>
<td>Shows an emerging awareness of data, but lack of awareness of assumptions regarding data analysis. Begins to identify some context when presenting a position</td>
</tr>
<tr>
<td><strong>Conclusions and related outcomes</strong></td>
<td>Conclusions and related outcomes are logical and reflect student’s</td>
<td>Conclusions are logically tied to a range of information,</td>
<td>Conclusion is logically tied to information (because information is</td>
<td>Conclusion is inconsistently tied to some of the information</td>
</tr>
</tbody>
</table>

Rubric for Critical Thinking Skill in Anatomy (oral defense) and Neuroscience and Physiology (oral defense) Masters programs
<p>| informed evaluation and ability to place evidence and perspectives discussed in priority order. | including opposing viewpoints; related outcomes are identified clearly | chosen to fit the desired conclusion); some related outcomes are identified early | discussed; related outcomes are oversimplified. |</p>
<table>
<thead>
<tr>
<th>Criteria/Element</th>
<th>Exemplary (4)</th>
<th>Proficient (3)</th>
<th>Partially Proficient (2)</th>
<th>Unsatisfactory (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>Presents topic and draws audience with compelling question. Appropriate for an intelligent audience that may be under-informed about the details of the topic</td>
<td>Clear, coherent and relates to topic; may not have captured all of audience. Most readers are interested. An audience with previous knowledge of the topic can follow the written work easily</td>
<td>Shows some structure, does not create a strong sense of what will follow; overly detailed; incomplete; little appeal</td>
<td>Does not orient audience to what follows; sequence is unclear; not interesting or relevant</td>
</tr>
<tr>
<td><strong>Terminology</strong></td>
<td>Technical terms well explained and jargon used expeditiously</td>
<td>A few unexplained terms that could be defined from context</td>
<td>Too much jargon and/or undefined terms</td>
<td>Unintelligible jargon</td>
</tr>
<tr>
<td><strong>Logic Underlying Presentation</strong></td>
<td>There is a concise and logical progression of ideas and supporting information such that the presentation makes a persuasive argument</td>
<td>Content has logical progression of ideas and supporting information but some points glossed over</td>
<td>Content and logic is hard to follow. There is no strong sense of purpose, but there is some persuasive information.</td>
<td>Presentation lacks logical progression of ideas and the presentation was not persuasive</td>
</tr>
<tr>
<td><strong>Conclusions</strong></td>
<td>Conclusions are appropriately drawn and supported by evidence</td>
<td>Conclusions are generally sound with a modicum of over or under interpretation</td>
<td>Lack of alternate interpretation provided in conclusions</td>
<td>No or wrong conclusions drawn</td>
</tr>
</tbody>
</table>
J. SUPPORTING DOCUMENTS

- The 2013 and 2014 Minutes of the NCBP Advisory Committee are attached.

NCBP Advisory Subcommittee Meeting
Minutes of January 17th, 2014 Meeting, 3:00 pm in 145 Biological Sciences
The major task at this meeting was to try to put together draft rubrics to be evaluated later (next week) by the whole committee. To perform this task, we used two rubrics provided to us by Associate Dean Kathrin Engisch: 1) the Presentation rubric was assembled from rubrics available from the following websites [http://uwstout.edu/static/profdev/rubrics/pptrubric.html](http://uwstout.edu/static/profdev/rubrics/pptrubric.html), [http://www.tcet.unt.edu/START/instruct/general/oral.htm](http://www.tcet.unt.edu/START/instruct/general/oral.htm) and [http://www.ncsu.edu/midlink/rub.pres.html](http://www.ncsu.edu/midlink/rub.pres.html) and 2) the Critical Thinking rubric developed by the Association of American Colleges and Universities.

We used elements of each of these rubrics to create draft rubrics for Comprehensive Knowledge of the Anatomy program (to be used with the Comprehensive Exam element of the course option), Critical Thinking Skill in Anatomy and Neuroscience and Physiology programs (to be used with the written thesis and oral defense of the thesis in both the Anatomy and Neuroscience and Physiology programs), and Communicates Effectively Skill in both Anatomy (to be used for scholarly project in course option; written thesis and oral defense in thesis option) and the Neuroscience and Physiology program (to be used for written thesis and oral defense). We decided to have four ranges: exemplary (4), proficient (3), partially proficient (2) and unsatisfactory (1). In each draft rubric we wanted at least four criteria/elements evaluated.

These rubrics were to be circulated to the full committee by Tuesday, January 21st at the latest and we planned a committee meeting of the full Advisory Committee to finalize language in these drafts on January 23 at 3:30 pm in room 145 Biological Sciences.

NCBP Advisory Committee
Minutes of January 23, 2014: 3:30 pm in room 145 Biological Sciences
Attendance: The full committee was in attendance.

In the first part of the committee meeting we discussed separating the written thesis from the oral defense (having different rubrics for each) in the thesis option. Since the Communicates Effectively skill would be evaluating the scholarly project in the Anatomy program (course option), the chair thought that the written thesis would be a better parallel to this in both Masters thesis options. Also, it would be awkward to evaluate both written thesis and oral defense with the exact same rubrics as the oral defense is where critical thinking skills are often pulled from the student during the defense portion of the presentation: this could lead to a student doing better in critical thinking in the oral defense, but showing little evidence of critical thinking in the written thesis.

It was decided that the Critical Thinking skill would only be evaluated during the oral defense of the thesis and the Communicates Effectively skill would only be evaluated using the written thesis.

The committee refined the draft rubrics and achieved consensus on the final versions. The committee realizes that these should be used for a year, obtaining feedback from the faculty using them and then language clarifications made, if necessary.

Dr. Ream indicated that he would incorporate the finalized rubrics and the minutes of the Advisory Committee into the program assessment reports he is finalizing for the college.

NCBP Advisory Committee meeting minutes.
December 10, 2013; 2:30 – 4 pm
The Committee was formed (elected members are Adrian Corbett, Barbara Kraszpulska, David Ladle, Gary Neider, and Larry Ream) and elected Adrian Corbett as its Chair. We were given the charge to help redesign the program assessments for our graduate programs (Neuroscience and physiology, and Anatomy programs), with clarification about what must be accomplished in the short term by Kathrin Engisch, Associate Dean of COSM.

- Our first task will be to identify learning objectives that we will quantify student’s performance in the Master’s program using a rubric designed for that learning objective.
- There should be at least two learning objectives for each program and each learning objective will have a rubric.
- The goal would be to use these new rubrics on courses in the programs beginning in January of 2014.
- If we plan to use material from a required course that is given in Spring Semester 2014, we would need to get that rubric ready first and decide who will grade the material from the course (more than just the instructor in the course?)
- In next year’s assessment, we need to document that the committee was working towards fulfilling these changes, which will give us more time to design the final rubrics. Thus, we must keep minutes of our meetings, showing our progress.
- The committee elected to use a subcommittee to do the hard work selecting the learning objectives and designing the rubric and then bring the product back to the whole committee for a vote.
- The subcommittee consists of Barbara Kraszpulska, David Ladle and Adrian Corbett. Larry Ream will meet with us ex officio to supply us with information about the graduate programs (e.g. the percentage of students that fail the Comprehensive Exam in the Anatomy Program).
- Our next subcommittee meeting is scheduled for December 16th at 2:30 in 145 Bio Sci.
- A second meeting is scheduled that week for December 18th at 3:30 in 145 Bio Sci, if needed, to finalize the learning objectives and elements in each program to be evaluated using the learning objective rubric.

NCBP Advisory Committee
Minutes of December 16, 2013 meeting

Subcommittee members present: Adrian Corbett, Barbara Kraszpulska, and David Ladle.

Ex officio: Larry Ream, to provide information about the graduate programs.

- The primary goal of this meeting was to develop the learning objectives for each Masters Program in the Department, and to determine what part of the program would be assessed with the rubrics (to be developed) for each learning objective.
- It was decided that the Anatomy thesis MS track and the Neuroscience and Physiology MS thesis track are very similar, so should have similar learning objectives, rubrics and items in the program to be assessed.
The thesis and oral thesis defense were chosen as the elements to be evaluated by the learning objective rubric in each program.

The two learning objectives are: 1) the graduate will be able to communicate effectively and 2) the graduate should be able to think critically about the thesis research.

- The Anatomy course MS track is NOT similar to the two above programs and should have its own learning objectives, rubrics and elements in the program to be evaluated using the rubric.

- The Comprehensive Exam is necessary to pass this program and it evaluates knowledge of Anatomy, not critical thinking per se. Also, we didn’t want to evaluate effective communication during this exam, as a student could effectively communicate but be totally wrong in his/her knowledge of the content.
  - Therefore, the learning objective associated with this exam will be: \textit{The graduate must demonstrate extensive knowledge of Anatomy, as taught in this program.}

- The Scholarly Project is designed to be a writing exercise, similar to writing a thesis, but using a review of primary literature about a particular research topic. All graduates must complete this and again, they are not asked by many instructors to critically evaluate the data from the papers they cite in this review. They should be able to effectively communicate in their paper review, however.
  - Therefore, the learning objective associated with the Scholarly project will be: \textit{The graduate will be able to communicate effectively.}

- The material developed from this meeting will be shared with all members of the Advisory Committee as well as with Kathrin Engisch, Associate Dean of COSM, for their input.

- Since we accomplished our main objectives (outside of the rubric development), the meeting for December 18\textsuperscript{th} from 3-5pm was cancelled.